



PCT/AU2004/000582

Patent Office
Canberra

REC'D 25 MAY 2004

WIPO PCT

I, LEANNE MYNOTT, MANAGER EXAMINATION SUPPORT AND SALES hereby certify that annexed is a true copy of the Provisional specification in connection with Application No. 2003904257 for a patent by KING FURNITURE (AUSTRALIA) PTY LTD as filed on 11 August 2003.



WITNESS my hand this
Fourteenth day of May 2004

LEANNE MYNOTT
MANAGER EXAMINATION SUPPORT
AND SALES

**PRIORITY
DOCUMENT**

SUBMITTED OR TRANSMITTED IN
COMPLIANCE WITH RULE 17.1(a) OR (b)

AUSTRALIA

Patents Act 1990

King Furniture (Australia) Pty Ltd

PROVISIONAL SPECIFICATION

Invention Title:

An article of furniture

The invention is described in the following statement:

Field of the invention

This invention relates to an article of furniture. More particularly, the invention relates to an adjustable article of furniture.

5 Background to the invention

Various reclining-types of armchairs are known which involve a pivoting backrest and an extendible footrest. However, a disadvantage of this arrangement is the space required for such an article of furniture, when in its reclining position.

10 In addition, such articles of furniture also have complicated manipulating mechanisms to cause the article of furniture to be placed in a reclining position and to be returned to an upright position. The complicated design of the manipulating mechanism renders it prone to failure.

The Applicant is aware of an article of furniture where a backrest pivots to facilitate greater depth of a base of the article of furniture. However, a disadvantage of
15 this arrangement is that, once again, a large amount of space is necessary to pivot the backrest. Also, the backrest is only movable between two positions.

Summary of the invention

According to a first aspect of the invention, there is provided an article of
20 furniture which includes:

a base having a front and a rear and a top surface; and

a backrest assembly having a front edge and a rear edge and slideably arranged relative to the base in a plane parallel to the top surface of the base to adjust a depth of the base as measured between the front edge of the backrest assembly and the front of
25 the base.

The article of furniture may include a carrier arrangement interposed between the base and the backrest assembly for facilitating sliding displacement of the backrest assembly relative to the base. The carrier arrangement may include a locking mechanism for locking the backrest in a first position at which the depth of the base is a
30 minimum, a second position at which the depth of the base is a maximum and at least certain predetermined positions between the first position and the second position.

In a preferred form of the invention, the article of furniture is in the form of a sofa. However, it will be appreciated that the invention could apply equally to other seating arrangements such as, for example, a chair.

35 The backrest assembly may comprise a backrest member and at least one armrest extending at an angle from the backrest. The backrest member may define the

front edge and the rear edge of the backrest assembly. Preferably, the backrest assembly includes two armrests, one at each end of the backrest member. Typically, the armrests may extend at right angles to the backrest member.

When the backrest assembly is in its first position relative to the base, the rear edge of the backrest member may be substantially in register with the rear of the base. When the backrest assembly is in its second position relative to the base, the rear edge of the backrest member may overhang the rear of the base.

The carrier arrangement may include a pair of rails, one rail being arranged beneath each armrest of the backrest assembly. A runner may be displaceably arranged on each rail. Each runner may have a locking mechanism associated with it. The locking mechanism may include a concealed operating member to impart an attractive appearance to the finished article of furniture.

The rails may be arranged in a concealed portion on the base with the runners being carried on a lower side of each of the armrests so that, when the backrest assembly is at either of its limits of movement, the rails remain concealed beneath the armrests.

According to a second aspect of the invention, there is provided a locking mechanism which includes:

a tubular housing defining an aperture in a peripheral wall;
a locking member receivable in the aperture, the locking member being displaceable between a first position in which it protrudes through the aperture and a second position in which it is at least partially withdrawn into the aperture;

a displacement member slideably received in the housing, the displacement member being displaceable between two extremes of movement where, at a first extreme of movement, the locking member is urged partially out of the aperture in the housing to protrude through the housing to effect locking and, at a second extreme of movement, the locking member is able to be at least partially withdrawn into the housing to effect unlocking; and

an urging means for urging the displacement member to its first extreme of movement.

The locking mechanism may include an operating member which acts on the displacement member, against the action of the urging means, for displacing the displacement member, relative to the housing, from the first extreme of movement of the displacement means to the second extreme of movement.

The displacement member may be in the form of a rod slideably received in a passage of the housing. The rod may have a notch defining a ramped surface formed

proximate the end of the rod received in the housing, the notch being aligned with the aperture in the wall of the housing.

The ramped surface may bear against the locking member and may support the locking member relative to the aperture in the body member. The locking member may
5 be in the form of a ball.

The urging means may be in the form of a coil spring acting on the rod.

The locking mechanism, as described above, may be used with the article of furniture, also as described above. However, it will be appreciated that the locking mechanism could have other applications.

10

Brief description of the drawings

The invention is now described, by way of example, with reference to the accompanying diagrammatic drawings in which:

Figure 1 shows a three dimensional, schematic view of an article of furniture, in
15 accordance with an embodiment of a first aspect of the invention, with a backrest assembly of the article of furniture in a first position;

Figure 2 shows a three dimensional, schematic view of the article of furniture with the backrest assembly in a second position;

Figure 3 shows a schematic plan view of the article of furniture of Figures 1 and
20 2 illustrating a locking mechanism in accordance with an embodiment of another aspect of the invention;

Figure 4 shows a schematic side view of the locking mechanism in its locking configuration; and

Figure 5 shows a schematic side view of the locking mechanism in its unlocked
25 configuration.

Detailed description of the preferred embodiments

In Figures 1 to 3 of the drawings, reference numeral 10 generally designates an article of furniture, in the form of a sofa, in accordance with an embodiment of a first
30 aspect of the invention.

The sofa 10 includes a base 12 having a front 14, a rear 16 and a top surface 18.

A backrest assembly 20 is slideably arranged relative to the base 12 in a plane parallel to the top surface 18 of the base 12 to adjust a depth 'D' (Figure 3) of the base. The backrest assembly defines a front edge 22 and a back edge 24. The depth 'D' of the
35 base 12 is measured between the front 14 of the base 12 and the front edge 22 of the backrest assembly 20.

The backrest assembly 20 includes a backrest member 26 and a pair of armrests 28. The armrests 28 are arranged at opposed ends of the backrest member 26.

To impart an attractive appearance to the sofa 10, the backrest member 26 of the backrest assembly 20 has a width greater than its height.

5 The sofa 10 includes a carrier arrangement for slideably supporting the backrest assembly 20 on the base 12. The carrier arrangement comprises a pair of rails 30, one arranged beneath each armrest 28. The rails 30 are secured via struts 32 (Figures 4 and 5) to the base 12.

10 Each armrest 28 carries, on its lower surface, a runner 34 which is held slideably captive on its associated rail 30.

It is to be noted that the degree of movement of the backrest assembly 20 relative to the base 12 illustrated in Figures 1 and 2 of the drawings is greatly exaggerated merely to illustrate the operation of the sofa 10. In practice, the degree of movement is substantially more limited and the extent of movement of the backrest 20
15 relative to the base 12 is shown at 36 in Figure 3 of the drawings.

The sofa 10 includes a locking mechanism 40 comprising a lock 38 associated with each runner 34. Each lock 38 includes a tubular housing 42 having a closed end 44 and an open end 46. A displacement member, or rod, 48 extends into the interior of the housing 42 through the open end 46. A locking member in the form of a ball
20 bearing or ball 50 is held captive in a notch 52 defined in that end of the rod 48 received in the housing 42, the notch 52 being bounded by a peripheral wall 54 of the housing 42.

The peripheral wall 54 of the housing 42 defines an opening 56 in register with the notch 52 through which the ball 50 protrudes at least partially when the lock 38 is in
25 its locked configuration as shown in Figure 4 of the drawings.

The notch 52 in the end of the rod 48 is defined by a ramped surface 58 in the end of the rod 48.

When the lock 38 is in its locking configuration, as shown in Figure 4 of the drawings, a lower part (when viewed in the orientation of Figure 4 of the drawings) of
30 the ramp 58 bears on the ball 50, forcing it downwardly into seating engagement with a recess 60 defined in a top surface of the rail 30. To effect locking, the ball 50 passes through an opening 62 defined in the runner 34. It will also be appreciated that a plurality of recesses 60 are defined at longitudinally spaced intervals in the top surface of the rail 30 within the limits of movement, as illustrated at 36, of the backrest
35 assembly 20 relative to the base 12 to provide a range of positions at which the backrest assembly 20 can be locked relative to the base 12.

An urging means in the form of a coil spring 64 is interposed between the end 44 of the housing 42 and the end 48 of the rod received in the housing 42 to urge the rod 48 into its locked configuration as shown in Figure 4 of the drawings.

When the lock 38 is moved to an unlocked configuration, the rod 48 is urged in the direction of arrow 66 (Figure 5) against the action of the coil spring 64 so that a higher part of the ramp 58 is in register with the ball 50. The ball 50 is then free to be withdrawn out of the recess 60 in the top surface of the rail 30. This, in turn, frees the runner 34 to slide relative to the rail 30 in the direction of arrows 68 (Figure 3).

The locking mechanism 40 includes an operating member 70 (Figure 3) which is arranged in a concealed position beneath the backrest 26 of the backrest assembly 20 and which is operated by an occupant to effect sliding movement of the backrest assembly 20 relative to the base 12 of the sofa 10 and also to lock the backrest assembly 20 in the desired position relative to the base 12.

In use, to effect sliding movement of the backrest assembly 20 relative to the base 12, the operating member 70 of the locking mechanism 40 is operated to move the locks 38 to the unlocked configuration as shown in Figure 5 of the drawings. Because the ball 50 of each lock 38 is no longer constrained by the ramped surface of its associated notch 52 and, because less than half the circumference of the ball 50 is received in the recess 60 of the rail 30, when pressure is applied to the backrest assembly 20 in the direction in which it is desired to move the assembly 20, the ball 50 clears the recess 60 of the rail 30. The backrest assembly 20 is then able to be slid in the desired direction either to increase or decrease the depth 'D' of the base 12 as measured between the front 14 of the base 12 and the front edge 22 of the backrest assembly 20. For example, if the occupant of the sofa 10 wishes to recline, the backrest assembly 20, if not already at its rearmost limit of movement, is slid to that position after releasing the locks 38 of the locking mechanism 40. Once at that position, the operating member 70 is released causing the locks 38 to move to their locked configuration retaining the backrest assembly 20 at its rearmost limit of movement relative to the base 12.

Should the occupant of the sofa wish to sit more upright, the operation is reversed. In other words, the operating member 70 is again operated to cause the locks 38 to move to their unlocked configuration. The backrest assembly 20 is slid towards the front of 14 of the base 12. When the backrest assembly is at the limit of its forward travel, the operating member 70 of the locking mechanism 40 is released, once again, causing the locks 38 to adopt their locked configuration and retaining the backrest assembly 20 at its forwardmost position relative to the base 12.

It will also be appreciated that the backrest assembly 20 can be locked at any intermediate position relative to the base 12 between the forwardmost limit of travel of the backrest assembly 20 and the rearmost limit of travel of the back rest assembly 20.

It is an advantage of the invention that an article of furniture is provided which
5 has an extremely simple mechanism for effecting an increase or decrease in the depth of the base of that article of furniture. No complicated reclining mechanism is required. Also, the footprint of the article of furniture, even with the backrest assembly 20 at its rearmost limit of travel, is not significantly greater than when the backrest assembly 20 is at its forward most limit of travel. Thus, the article of furniture does not
10 use a significantly greater amount of space when being used as a recliner.

In addition, a simplified but efficient locking mechanism 40 is provided which is simple to operate. The Applicant believes that, as a result of the limited number of moving parts of the locking mechanism, it should prove very reliable in operation. The locking mechanism is mounted in a concealed position in the article of furniture and, as
15 a result, does not impair the aesthetics of the article of furniture.

It will be appreciated by persons skilled in the art that numerous variations and/or modifications may be made to the invention as shown in the specific embodiments without departing from the spirit or scope of the invention as broadly described. The present embodiments are, therefore, to be considered in all respects as
20 illustrative and not restrictive.

Dated this eleventh day of August 2003

King Furniture (Australia) Pty Ltd
Patent Attorneys for the Applicant:

F B RICE & CO

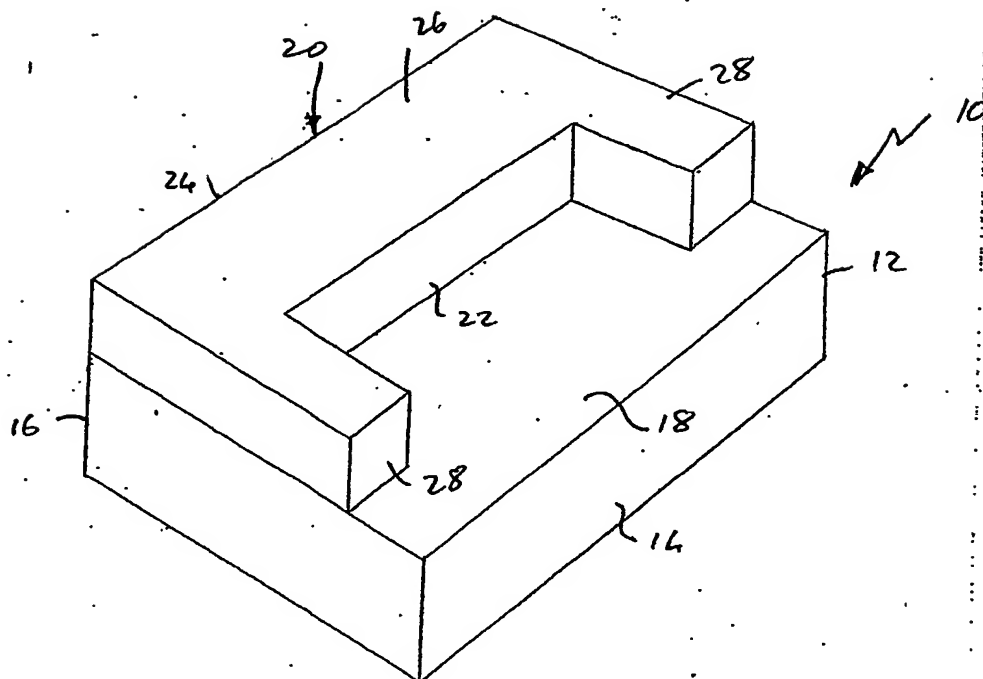


FIG. 1

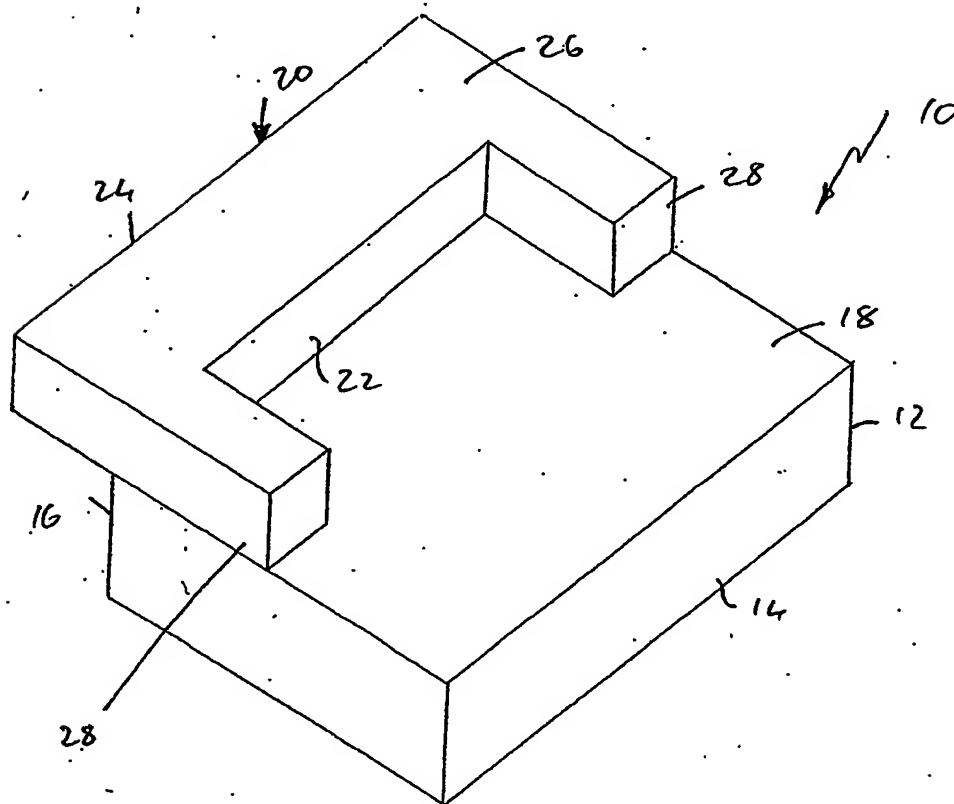


FIG. 2

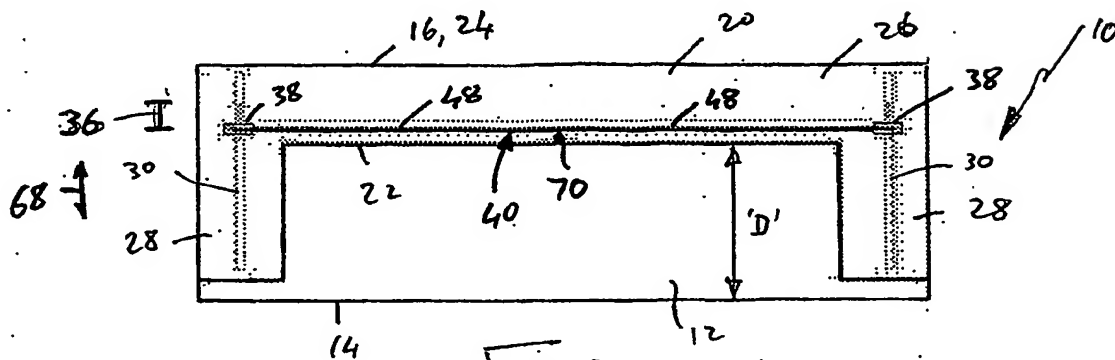


FIG. 3

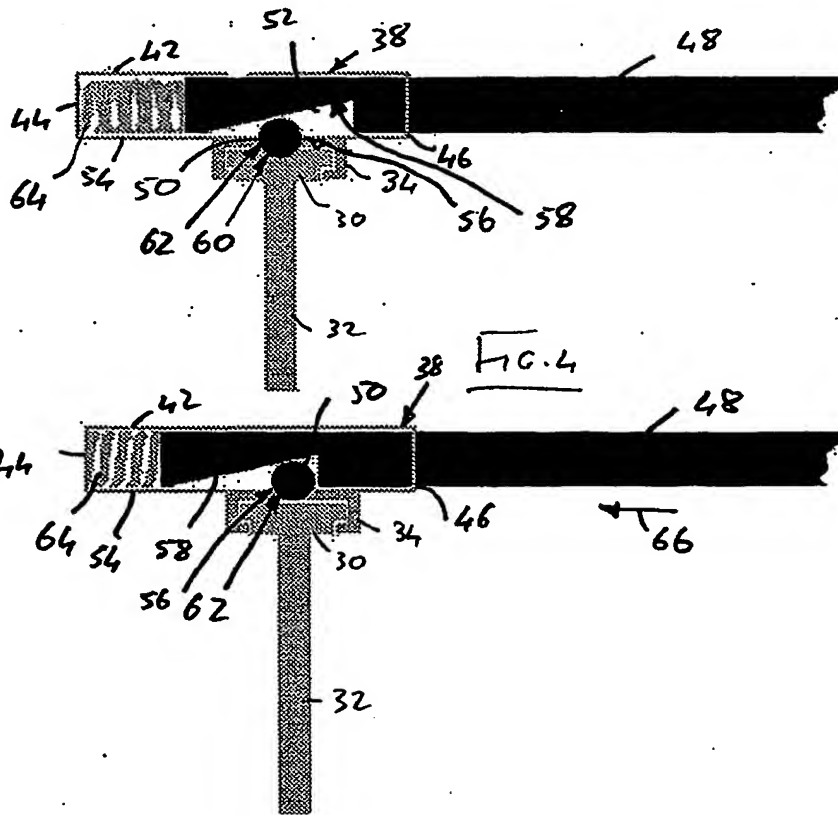


FIG. 4

FIG. 5